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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,085	09/09/2003	Rene Perrot	CS-21,376	9162

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EXAMINER

MCDONALD, RODNEY GLENN

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 10/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/657,085

Applicant(s)

PERROT ET AL.

Examiner

Rodney G. McDonald

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,8-12 and 14-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6,8-12 and 14-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10-3-05 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-6 and 8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, wherein at least about fifty percent of the front surface is frusta-conically configured is not discussed in Applicant's specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-6, 8-12 and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunt et al. (U.S. Pat. 6,599,405) in view of Hunt et al. (U.S. Pat. 5,674,367) and Bilz (DD 150482)

Regarding Applicant's claims 1, 9 and 14, Hunt et al. '405 teach a method of manufacturing a sputter target assembly (See Abstract) comprising the steps of manufacturing a backing plate (Column 1 lines 61-62), the backing plate having a cylindrical recess having a depth and a diameter and a yield strength less than the yield strength of a target insert. (Column 1 lines 61-66) The backing plate has a planar top surface. (See Fig. 1) A target insert is manufactured. (Column 1 lines 59) The target insert has a conical-shaped rear surface. (Column 2 lines 30-31) The target has a rear

surface that corresponds with the cylindrical recess of the backing plate. (Column 1 lines 62-64) The target has a yield strength greater than that of the backing plate. (Column 3 lines 4-6) The recess of the backing plate has a depth that is less than the height of the target. (Column 1 lines 62-64) The target insert is hot pressed into the cylindrical recess so that the backing plate material reaches a state of plastic deformation that facilitates forming strong solid state bonds. It is advantageous to diffuse and react the materials together to form reaction products that contribute to the bond strength. (Column 3 lines 21-32)

Regarding Applicant's Claims 2 and 9, Hunt et al. '405 teach at least fifty percent of the frusta-conical rear surface bonds to the backing plate. (Column 3 lines 49-51)

Regarding Applicant's Claim 3, Hunt et al. '405 the target insert and backing plate are maintained at a temperature of above 200 degrees C for at least one hour to improve bonding. (Column 2 lines 60-62)

Regarding Applicant's Claim 4, Hunt et al. '405 pressing the target into near final shape includes utilizing powder. (Column 2 lines 56-59)

Regarding Applicant's Claim 5, Hunt et al. '405 the volume of the recess of the backing plate has a volume that is at least ninety percent of the volume of the tapered insert. (Column 3 lines 11-14)

Regarding Applicant's Claim 6, Hunt et al. '405 teach the backing plate recess can have a volume that is approximately equal to the tapered target insert's volume. (Column 3 lines 18-20)

Regarding Applicant's Claim 8, Hunt et al. '405 teach the cylindrical recess is disposed in a portion of the planar top surface of the backing plate. (See Fig. 1)

Regarding Applicant's Claims 10 and 15, Hunt et al. '405 teach the recess having a shape conformed to the shape of the target insert. (Column 6 lines 36-38)

Regarding Applicant's Claims 11 and 16, Hunt et al. '405 teach the reaction product between the target insert and the backing plate bonds the target insert to the backing plate. (Column 3 lines 30-32)

Regarding Applicant's Claims 12 and 17, Hunt et al. '405 teach a frustum and a conical interface bonds the target insert to the backing plate. (Column 6 lines 42-44)

Regarding Applicant's Claim 14, Hunt et al. '405 teach the conical interface consists of at least about sixty percent of the total bond surface area of the target insert. (Column 3 lines 51-53)

The differences between Hunt et al. '405 and the present claims is that the target insert protruding above the planar front surface of the backing plate is not discussed (Claim 1, 9,18), the front surface of the target has a frusta-conical configuration is not discussed (Claims 1,9, 14) and wherein at least about fifty percent of the front surface is frusta-conically configured is not discussed (Claim 1).

Regarding the target insert protruding above the planar front surface of the backing plate, Hunt et al. '367 teach a circular target. (Column 3 lines 4-6) The target front surface extends above the target backing plate. (Figure 7)

Regarding the front surface of the target having a frusta-conical configuration, Hunt et al. '405 teach that the target front surface can be frusta-conical. (Figure 7) Bilz

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teach in the Figure a target front surface where the target front surface is frusta-conical to obtain a uniform coating. (See Bilz Abstract; Figure)

The motivation for utilizing a target that is frusta-conical and extends above the surface of the backing plate is that it allows for utilizing thicker targets. (Hunt et al. Column 2 lines 6-8)

Regarding wherein at least about fifty percent of the front surface is frusta-conically configured, Bilz teach in the Figure a target front surface which has at least 50% of the front surface frusta conically configured. The sloped portions are greater than the flat portion of the target. (See Bilz Fig. 1)

The motivation for providing a target wherein at least about fifty percent of the front surface is frusta-conically configured is that it allows for depositing coatings uniformly. (See Bilz Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Hunt et al. '405 by utilizing a target insert that protrudes above the planar front surface of the backing plate, to have utilized a front surface that has a frusta-conical configuration as taught by Hunt et al. '367 and Bilz and to have utilized a target wherein at least about fifty percent of the font surface is frusta-conically configured as taught by Bilz because it allows for utilizing thicker targets and for depositing coatings uniformly.

REMARKS:

In response to the argument that Hunt '367 does not teach a frusta-conical front surface to a target, it is argued that Hunt '367 as shown in Figure 7 do show a frusta-

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conical front surface. Furthermore, Bilz teach in their Figure a target having a front surface to be sputtered that has a frusta-conical front surface. (See Hunt '367 and Bilz discussed above)

In response to the argument that Hunt '367 does not teach a target having a front surface wherein at least fifty percent of the front surface is frusta-conically configured, it is argued that Bilz is provided to teach a front surface of a sputtering target where at least fifty percent of the front surface is frusta-conically configured. (See Bilz discussed above)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Rodney G. McDonald
Primary Examiner
Art Unit 1753

RM
October 11, 2005